

## INTRODUCTORY NOTES

*I have in my records a photocopy of an article called 'Blood Transfusion through Ages' by 'Ming', published in the journal Rakt Daan (i.e. Blood Donation) Vol.1 May 1963, No.6 (pages 4-7), which contains information relating to the history of transfusion. I have been unable to locate a version of this article via the Internet. A transcript of this article as written is reproduced below.*

*Attempts at trying to establish who owns the copyright for the journal in which the article was originally published have been unsuccessful, as have my attempts to identify the author. I am aware therefore that it may still be under copyright and as such the article is presented in this format for personal study only and must not be downloaded copied, modified or reproduced further – it is provided here as an additional source of information relating to the history of blood transfusion.*

## BLOOD TRANSFUSION THROUGH AGES

### Ming

*"In the whole range of surgical or medical treatment there is nothing quite so dramatic as the effect of transfusion on an apparently hopeless case at the point of death from loss of blood."*

In an address to the Royal College of Physicians in 1944, Mr. Winston Churchill (now Sir Winston) remarked, "The longer you can look back, the further you can look forward". This truth provides ample justification for the appearance of this compilation, the writer claiming no originality either in matter of facts or in manner of presenting them. It is just for your delectation. The past supplies the key to the present and the future. History forms the basis of all knowledge and is a convenient avenue of approach to any subject of study. Vast strides that medical science has taken in the last few years have captured the imagination of us all. With each new advance a death-blow is being dealt at man's common and inveterate enemy – disease. Nowhere has this been more clearly shown than in the Far Eastern Campaigns of the Second World War, where countless lives were saved which in another age would have been lost. From its early conception to its present state, the story of blood transfusion is of singular interest – both scientific and human. It is a noble theme and it is hoped that the tale, however imperfectly told, may stimulate interest in an achievement of the past which also helps to solve problems of the present.

Among methods of treatment which have become generally adopted within the last twenty years there is probably none that appeals more to popular imagination than blood transfusion. Although this simple operation is now a matter of daily occurrence, a tinge of glamour once surrounded it as also the person who gave some of his blood to save another. Today no donor considers that there is anything heroic in this sacrifice which hardly entails more in its efforts than a loss of some time. It was far otherwise a few years ago. An occurrence of a blood transfusion was eagerly seized upon by the press and all details given to the world with the name of the gallant donor and the name of the recipient "snatched from the jaws of death". As late as 1917 in the Great War, when transfusion came into common use in casualty clearing stations at the front, the donor was deemed worthy of twenty-four hours or more off duty, a liberal ration of Stout or Port Wine, and a fort-night's leave of absence".

## **THIRST FOR BLOOD**

“Nothing more difficult than a beginning” wrote Byron of poetry and his remark may aptly be applied to the history of blood transfusion for it is no easy task to describe the means by which our primitive ancestors discovered and developed this art. Indeed, the whole vast subject is largely a matter of conjectures. There have been many allusions in early mythological thought of various ancient cultures but these allusions are so vague that it is difficult to codify them into a systematic and logical body of thought.

The concept that human blood was a therapeutic agent antedates civilization and probably has begun with the origin of mankind itself. Kings of ancient Egypt bathed themselves in blood baths for resuscitation and recuperation and it has been recorded by Gibbon that the Romans used to rush into the gladiatorial arena to drink the fresh blood of dying gladiators, “butcher’d to make a Roman holiday”. Throughout Classical Literature we find allusions to some sort of ‘Transfusions’ being practised, especially as drinking of human blood was considered a health restorative measure. However, it is difficult to state just when transfusion of blood in the sense in which we understand the term took place.

## **SOME DUBIOUS CLAIMANTS**

Considerable controversy exists regarding claims of priority. The oft-quoted and famous case of Pope Innocent VIII, in the year 1492, makes a distinct milestone in the history of blood transfusion. According to Villari the Pope “had for some time fallen into a kind of somnolency which was sometimes so profound that the whole court believed him to be dead”. A Jewish doctor proposed to transfuse blood to awaken his exhausted vitality. Accordingly blood of a youth was transfused into the veins of the Old Man. Lives of three boys were sacrificed but without any effect to save life of the Pope. The Pope soon died and the Jewish Physician disappeared.

The subject of blood transfusion was revived after lapse of a century. Hieronymus Cardamus and Magnus Pegel have both been credited with having practised blood transfusion. On the other hand, the first definite application of blood transfusion with a detailed description of technique has been credited to Andreas Libavius, a chemist of Halle. Libavius has given a complete description of transfusion in his writings published in 1615. Whereas some believe that Libavius was a serious advocate of transfusion, others have questioned his seriousness. In 1628 Jean De Colle of Padua also described a method of transfusion.

## **HARVEY AND HIS WONDER**

It is however difficult to conceive how blood transfusion could have been practised at a time when circulation of blood was not properly known. The first historical landmark in the story of blood transfusion was discovery by William Harvey of circulation of blood. All attempts at transfusion before this discovery can only be regarded with considerable doubt. It was as a result of Harvey’s discovery that blood transfusion assumed a method and an “earthly shape”. This was a discovery of an indeed immortal nature.

## **THE DATE – AUGUST 13, 1654**

It is not until after the middle of the Seventeenth Century that authentic references to blood transfusions are to be found. August Thirteenth, Sixteen Hundred and Fifty

Four was a red letter day in the history of blood transfusion. A Florentine physician, Francesco Folli, performed the first blood transfusion on that date in the presence of Grand Duke Fredrick II. He employed a silver tube inserted in the artery of the donor and connected to a canula of bone in the vein of the recipient by means of a hollow pipe made from the blood vessel of an animal. Almost at the same time experiments in transfusion were made by Cluny and Tardi in France. Tardi actually wrote in a paper "Lacking a capable surgeon, I can myself perform transfusion alone, having practised all my life, not only at operations on the dead, but also on living bodies".

Very soon the Royal Society in England took up the subject. Sir Christopher Wren was one of the first investigators. He tried to develop a new method of administering blood and Pepys recorded fully in his Diary one of the earliest experiments. "At the Pope's Head, Dr. Croone told me that, at the meetings of Gresham College tonight, there was a pretty experiment of the blood of one dog let out, till he died, into the body of another on one side while all his own run out on the other side. The first died upon the place and the other did very well." The date of the entry in the Diary is November 14, 1666. Further experiments were continued by T. Clark, Robert Boyle and Henshawe with indifferent success.

Stimulated by these investigations, Richard Lower began his experiments of direct transfusion of blood from one animal to another. To Lower says Hollingworth must go the credit of having performed the first successful transfusion of blood. Lower's experiments attracted once again the attention of the Royal Society in 1665 and it was proposed to try transfusion of blood. There were several unsuccessful attempts. In February 1665, Richard Lower performed the operation of transfusion successfully. Quills were employed and later a silver tube to convey blood from the carotid artery of one dog to the jugular vein of another dog. On November 23, 1667, Dr. Lower made another experiment, this time on a man Arthur Coga 'a mildly melancholy insane man' using the blood of a lamb. Again we find a reference to this in Pepys' Diary under the year 1667. In this case the blood donor was a sheep and the transfusion was apparently successful.

At the same time, similar investigations were being done in other countries and in Paris, Jean Baptiste Denis performed the first authentically recorded successful transfusion on human beings in June 1667. His subject was a boy of fifteen who was given blood from a lamb. "He grows fat visibly", reported Denis afterwards, "and is a subject of amazement to all those that knew him and dealt with him". Denis' renown as a transfuser brought on a storm of opposition hatred and jealousy and when his third and fourth attempts failed, these failures resulted in his arrest and trial for murder. After a prolonged legal battle Denis was exonerated but blood transfusion procedure was decreed criminal and the French Parliament prohibited it. The procedure was also abolished as far as the Royal Society was concerned and the Court in Rome corroborated Judgment of French Court and forbade blood transfusion operations. These court decrees sounded death-knell of blood transfusion procedures and interest in them abated throughout Europe.

During the period under review a complete ignorance of asepsis, of immunology, of the process of coagulation, of blood groups and of incompatibility caused severe and fatal reactions. The entire procedure came to be regarded as disreputable and hazardous. The Church disapproved of and the Government disfavoured the entire system of transfusing blood and meritorious work of Lower and Denis bore no fruit and no constructive work was done until the early Nineteenth Century.

## **JAMES BLUNDELL – 1818**

It remained for an Englishman, James Blundell, to revive the interest of the medical profession in Blood Transfusion. He devised an apparatus consisting of a funnel-shaped receptacle for blood, connected by a two-way tap with a syringe from which

blood was injected through a tube and canula into the recipient. Armed with this apparatus, Blundell attempted transfusion in the human being and thus placed blood transfusion upon a sound, rational and scientific basis.

However, four difficulties hindered the progress and these were agglutination, hemolysis, infection and blood coagulation. In an attempt to remove these technical difficulties innumerable ingenious instruments were devised many of which were rather bizzare and complicated in use.

## **LANDSTEINER - GROUPING OF BLOOD**

It was not until a wider knowledge of the chemistry of blood had been gained in the early years of the present century that an explanation of their former difficulties was afforded and scientific precautions discovered to render the operation safe. This came about as a result of the discoveries of Landsteiner and Shallock, who showed that there were different constituents in blood not only of different species but even among different human beings. Different types of blood were incompatible with one another and this was the explanation for the unexpected deaths that had followed transfusions in the past. Landsteiner had divided blood into three groups, and De Castello and Slurti added the fourth group. Hekton and Ottenberg confirmed these discoveries. The work was carried a good deal further by the investigations of Jansky in Scandinavia and Moss in America who classified human blood into four distinct groups. An international code was adopted, viz., AB (Universal Recipient) A, B and O (Universal Donor).

Difficulty regarding clotting of blood outside the body was also removed by various attempts – the most important being the introduction of Sodium Citrate by Prof. L. Agote of Buenos Aires. Hustin of Belgium had independently made the same discoveries and in March 1914 he was the first to transfuse citrated blood in a patient and in November 1914 Agote did the same in Buenos Aires. Blood Transfusion now came into its own and its use in military service during the World War increased its popularity. In the whole range of surgical or medical treatment there is nothing quite so dramatic and well nigh miraculous as the effect of transfusion on an apparently hopeless case at the point of death from loss of blood.

## **'BLOOD BANKS'**

Now-a-days direct blood transfusion is comparatively little employed. Science has found the means to preserve and store supplies of blood and hence "Blood Banks" are being set up everywhere. These banks provide a ready supply of blood for immediate use in emergencies. This blood bank system proved of enormous value in the War of 1939-45 in the treatment of both service and civilian casualties. Its efficiency was greatly increased by the discovery of a process whereby plasma of blood could be dried and stored in powder form.

Incomprehensible as human nature is, man's readiness to shed another's blood to further a cause – political, ecclesiastical, social or economic – has formed a counterpart in his willingness to give his blood to save a friend in need; and not only a friend but often a complete stranger! The term, "Blood Bank" is not merely a metaphor. Just as one cannot draw money from a bank without a previous deposit, so depletion without replenishment would soon cause a blood bank to cease to function. So donate!